GRADUATE PROGRAM

Engineering with a Concentration in Materials and Manufacturing Technology


Materials and manufacturing technology is concerned with the generation and application of knowledge related to the composition, structure and processing of materials to their properties and applications, as well as the manufacturing technologies needed for production. MMT has become an important component of engineering education, partly because of the sophistication required to engineer materials in a rapidly changing technological society, and partly because the selection of materials has become an integral part of almost every modern engineering design. In fact, further improvements in design are now viewed more and more as primarily materials and manufacturing issues. Both the development of new materials and the understanding of present-day materials demand a thorough knowledge of basic engineering and scientific principles including, for example, crystal structure, mechanics, mechanical behavior, electronic, optical and magnetic properties, thermodynamics, phase equilibria, heat transfer, diffusion, and the physics and chemistry of solids and chemical reactions.
DEGREES OFFERED
M.S. & Ph.D.

HIGHLIGHTS
• Schoolwide interdisciplinary program
• Integration of materials and manufacturing processes
• Broad choice of courses

RESEARCH FOCUS AREAS
• Chemical Processing and Production
• Electronic and Photonic Materials and Devices
• Biomedical and Electronic Manufacturing and Packaging
• Materials Engineering

RECOMMENDED BACKGROUND
Given the nature of materials and manufacturing technology as an interdisciplinary program, students with a background and suitable training in either materials, engineering (biomedical, civil, chemical, electrical and mechanical), or the physical sciences (physics, chemistry, geology) are encouraged to participate. Recommended background courses include an introduction to materials, thermodynamics, mechanical properties and electrical/optical/magnetic properties. A student with an insufficient background may be required to take remedial undergraduate courses following matriculation as a graduate student.

AFFILIATED FACILITIES
• Integrated Nanosystems Research Facility
• Irvine Materials Research Institute
• Bio-Organic Nanofabrication Lab